Dragonflies (Odonata) Observed in Hawaii in 1973 and 1974

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Two 4-week trips (21 February-21 March in 1973 and 1974) were made to Hawaii and observations were made on the unique fauna of dragonflies. Photographs in color and specimens of adults were taken, but observations of nymphs were few. One species, *Ischnura ramburii* Selys-Longchamps, was collected and is a new record for Hawaii. *Megalagrion deceptor* (McLachlan), an endemic form, is resurrected as a valid species. Species which were collected by me (unless otherwise noted), or observed, are treated below.

Anax junius (Drury) was particularly abundant in the lowlands during 1973. While common in 1974, it was noticeably less numerous. Material examined: HAWAII I.: 2♂♂, ponds in Hilea-by-the-Sea golf course, Hilea 20 m, 3.III.1973; 1♂, Pololu Valley, near sea level, 5.III.1973.

Anax strenuus Hagen, the Hawaiian giant dragonfly, a close relative to the preceding species, was common both years. It was more numerous above 600 m, and was usually feeding when seen at sea level. The habitat separation between this and the preceding species, while not complete, was usual. Material examined: MAUI I.: 1♂, Waikamoi Stream, 240 m, 13.III.1973; KAUAI I.: 1♂, Kokee, 900 m, 16.III.1973, feeding over road; 3♂♂, 1♀, Puu-Ka-Pele Lookout, 1200 m, 17.III.1973; 1♂ (sight), Kauaikinana Stream, 13.III.1974; 1♂(sight), Hanakapiai Stream, 16.III.1974; 1♂, Haena Park, sea level, 19.III.1974.

Nesogonia blackburni (McLachlan): In addition to a specimen captured bare-handedly by Mrs. Harwood (cited below), I identified a ♂ that alighted directly in front of me at less than 1 m while I was photographing damselflies beside Waikamoi Stream (Maui). Material examined: MAUI I.: 1♂ (sight), Waikamoi Stream 230 m, 27.II.1974; OAHU I.: 1♀, Mt. Tantalus trail, 460 m, 23.II.1974.

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Pantala flavescens (Fabricius), the globe trotter, was merely common in 1973 but in 1974, abundant, particularly at lower elevations. Perhaps the difference was due to rainfall. We were told that precipitation was below normal for the last five months of 1973, but above normal during the first two months of 1974. Our visits to Hawaii were during the last week of February and the first three weeks of March each year. As the globe trotter may develop from egg to adult in six weeks, and as it commonly breeds in rain pools, we may have witnessed a population explosion of this brown dragonfly. Certainly, the majority of the observed specimens were subteneral. Material examined: HAWAII I.: 1♂, Waipio Valley, sea level, 4.III.1973; MAUI I.: 1♂, Waikamoi Stream, 240 m, 13.III.1973; 2♂♂, same locality, 27.II.1974; KAUAI I.: 1♀, Waimea Stream, ca. 150 m, 18.III.1973; 2♂♂, Haena Park, sea level, 15, 16.III.1974.

Tramea lacerata Hagen: Material examined: HAWAII I.: 1 pair, pond in Hilea-by-the-Sea golf course, Hilea, 20 m, 3.III.1973.

Enallagma civile (Hagen): Material examined: HAWAII I.: 1♂, pond in Hilea-by-the-Sea golf course, Hilea, 20 m, 3.III.1973; 3♂♂, Wailoa State Park, Hilo, sea level, 7.III.1973; MAUI I.: 1♂, Kahului Pond, 20 m, 12.III.1973; KAUAI I.: 1♂, Kealia Stream, Waikapee slide, 230 m, 21.III.1973.

Ischnura ramburii, Selys-Longchamps, Rambur's fork-tail, is here reported from the Hawaiian Islands, both Oahu and Hawaii, for the first time. This species is common along the south Atlantic coast of North America and ranges into the tropics. Its habits are such that impregnated females may seek shelter in aircraft. Since Odonata are relatively resistant to insecticides, any aerial "stowaway" may survive the casual disinsectization. As Rambur's fork-tail is now known from both Hawaii and Oahu Islands, it is impossible to state with assurance where the species first became established. Material examined: HAWAII I.: 1♂, 1♀, Hilea-by-the-Sea golf course, Hilea, 20 m, 3.III.1973; 1♂, Pololu Valley, sea level, 5.III.1973; 8♂♂, 2♀, Wailoa State Park, Hilo, 15 m, 7.III.1973; OAHU I.: 1♂, Salt Lake, 15 m, 7.VI.1973, W.C. Gagne; 5♂♂, 7♀♀, 1 pair, Pearl Harbor, 15 m, 2.II.1974, F.G. Howarth.

Ischnura posita (Hagen), the exclamation fork-tail, is here recorded from Kauai for the first time. Material examined: KAUAI I.: 1♂, Waimea River above Kukui Trail, ca. 150 m, 18. III.1973; 1♂, Haena Park, sea level, 20.III.1974.

Magalagrion blackburni McLachlan: Material examined: MAUI I.: 3, Waikamoi Stream, 240 m, 10.III.1973; 2♂♂, same locality, 27.II.1974; 1♀, Iao Valley State Park, 290 m, 12.III.1973; 2♂♂, 1♀, Oheo Stream, 120 m, 28.II.1974; 4♂♂, 4♀♀, 1 pair, Pipiwai Stream, 135 to 365 m, 1.III.1974; 1♀, Kalena Stream, 2.III.1974; MOLOKAI I.: 1♂, Waialua Stream, 240 m, 7.III.1974; 1♂, 2♀♀, Halawa Stream, 150 m, 8, 10.III.1974.

Megalagrion deceptor (McLachlan): I recognize this as a valid species. It was treated as a junior synonym of *M. hawaiiense* (McLachlan) by Zimmerman (1948: 363). Photographs in color show that the adult males are black and red. On the other hand, the photograph of a single male of *M. hawaiiense* shows brilliant green spots on the sides of the pterothorax. These colors (red and green) fade in museum specimens to similar shades of cream. Zimmerman, who was familiar with preserved materail, synonymized these species. While my experience with live material is limited, I believe the two species should be separated. Material examined: MAUI I.: 5♂♂, Waimoku falls, 365 m, 1.III.1974.

Megalagrion hawaiiense (McLachlan): Material examined: MAUI I.: 1♂, Waikamoi Stream, 240 m, 13.III.1973.

Megalagrion heterogamias (Perkins): Material examined: KAUAI I.: 9♂♂, 1 pair, Kealia Stream near Waipahee Slide 230 m, 21.III.1973; 5♂♂, 2 pair, same locality, 20.III.1974; 1 Kauaikinana Stream, ca. 1200 m, 13.III.1974; 1♂, Waiakoali Stream, 1200 m, 13.III.1974; 3♂♂, 1♀, Kawaikoi Stream, ca. 1200 m, 14.III.1974; 1♂, 1♀, Hanakapiai Stream, ca. 250 m, 16.III.1974.

Megalagrion oresitrophum (Perkins): A pair was observed ovipositing in *Commelina diffusa* Burm. in Kauaikinana Stream, a tributary of the Waimea River. The approach for a photograph was difficult, and the male, as frequently happens with ovipositing pairs, showed alarm by fanning his wings. While I was striving to get the pair in focus, a male of the Hawaiian giant dragonfly, *Anax strenuus,* passed directly over the pair, about 15 cm above them. The male of *M. oresitrophum* dropped instantly to the stem of *Commelina* and became motionless. This brilliantly colored damselfly is amazingly difficult to see when motionless. Material examined: KAUAI I.: 1♂, Kauaikinana Stream, ca. 1200 m, 13.III.1974; 1♂, Kawaikoi Stream, ca. 1200 m, 14.III.1974.

Megalagrion pacificum (McLachlan): Material examined: MAUI I.: 2♂♂, Waikamoi Stream, 240 m, 10.III.1973; 6♂♂, same locality, 13.III. 1973; 3♂♂, 1 pair, same locality, 27.II.1974; 1 pair, same locality, 3.III. 1973; 1♂, Haipuaena Stream, 20 m, 27.II.1974; 1♂, Puohokamoa Stream, 240 m, 27.II.1974; MOLOKAI I.: 3♂♂, Waialua Stream, 240, 10.III.1974.

Megalagrion vagabundum (Perkins): Material examined: KAUAI I.: 4♂♂, 1 pair, Waimea River above Kukui trail, ca. 150 m, 18.III.1973; 4♂♂, trail, Haena to Kalalau, 0.42 km before Hanakapiai Stream, ca. 90 m, 20.III.1973; 2♂♂, Kilauea Pool, 21.III.1973; 1♂, Kealia Stream at Waipahee Slide, 230 m, 21.III.1973; 7♂♂, 3♀♀, 1 pair, Hanakapiai Valley, ca. 150 m, 16.III.1974; 1♀, stream 0.85 km W. of Haena Park, ca. 10 m, 19.III.1974.

Megalagrion sp. from Kauai: By lifting stones from the most swiftly flowing parts of the torrential Kawaikoi Stream, more than 40 nymphs of *Megalagrion* were taken. A single stone, about 15 cm in diameter, and 3-4 cm thick was inhabited by 5 nymphs on the upper surface and 4 on the lower. I was at some pains to examine stones from the pools and areas where the current moved more slowly, but the nymphs were found only where the water rushed swiftly between rocks. Wing pads of a few of the nymphs were swollen suggesting emergence might be close at hand. However, none transformed during my short stay there and the nymphs remain unidentified. Adults of both *M. oresitrophum* and *M. heterogamias* (Perkins) were active on Kawaikoi Stream at the time. Perkins reported that nymphs of *M. heterogamias* are found where water oozes from a perpendicular cliff (see Zimmerman, 1948:365). Possibly swiftly flowing, well-aerated waters may be selected as well.

Reference Cited

Zimmerman, E.C. 1948. Order Odonata Fabricius, 1793. *In* Insects of Hawaii 2: 321-385.